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Timpanogos Cave National Monument

Statement for Management

United States Department of the Interior - National Park Service

April 1989



Definition

The Statement for Management (SFM) provides an up-to-date inventory of the park's condition and an analysis of its problems. It does not involve any prescriptive decisions of future management and use of the park, but it provides a format for evaluating conditions and identifying major issues and information voids.

Recommended by: /s/ Michael O. Hill 2/24/89
Superintendent, Date
Timpanogos Cave National Monument

Approved by: Lorraine Montoya 4/30/89
Regional Director Date
Rocky Mountain Region

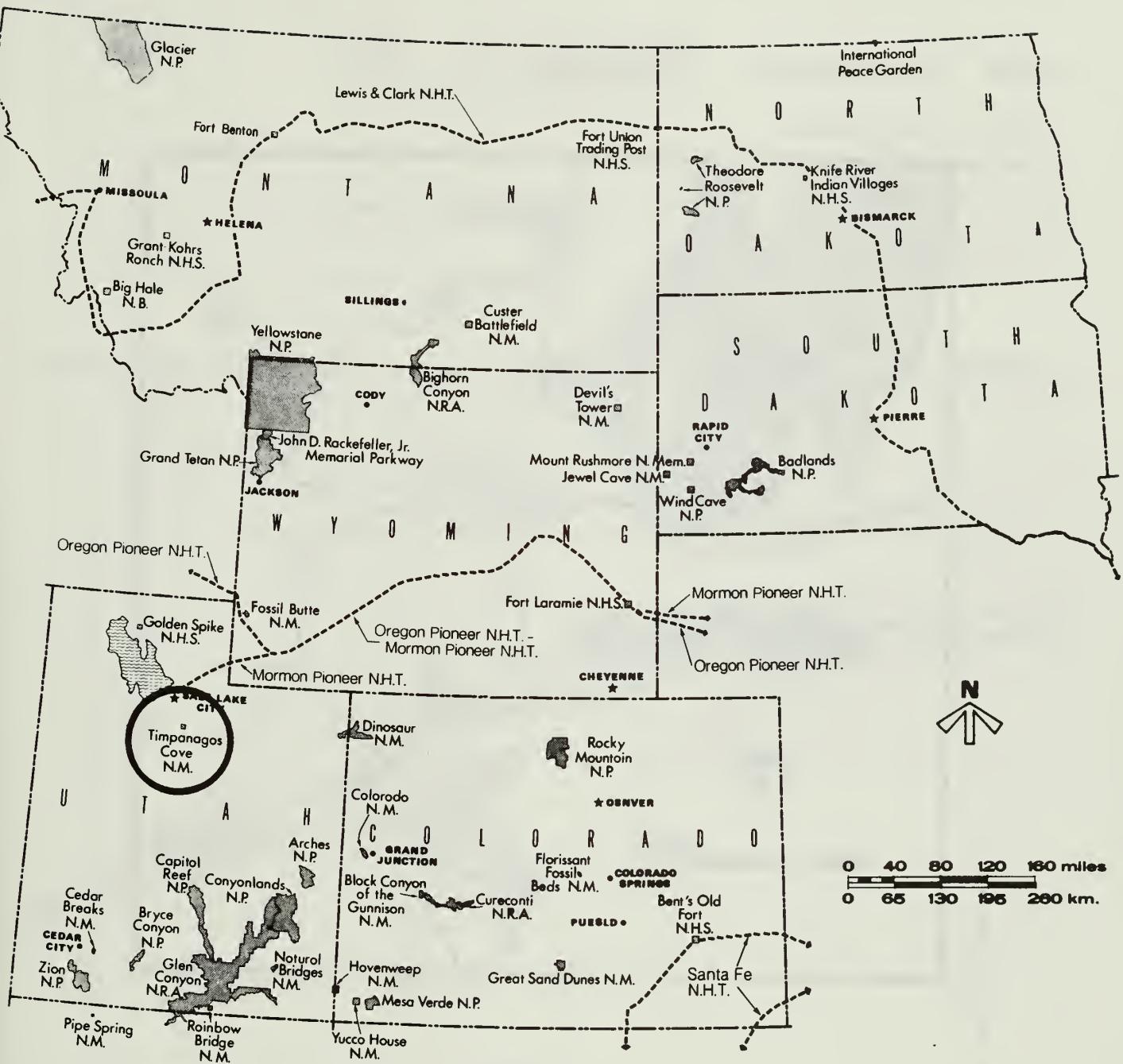
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Legend

- Locations of Major Cities
- ★ Locations of State Capitals

State Boundary Lines

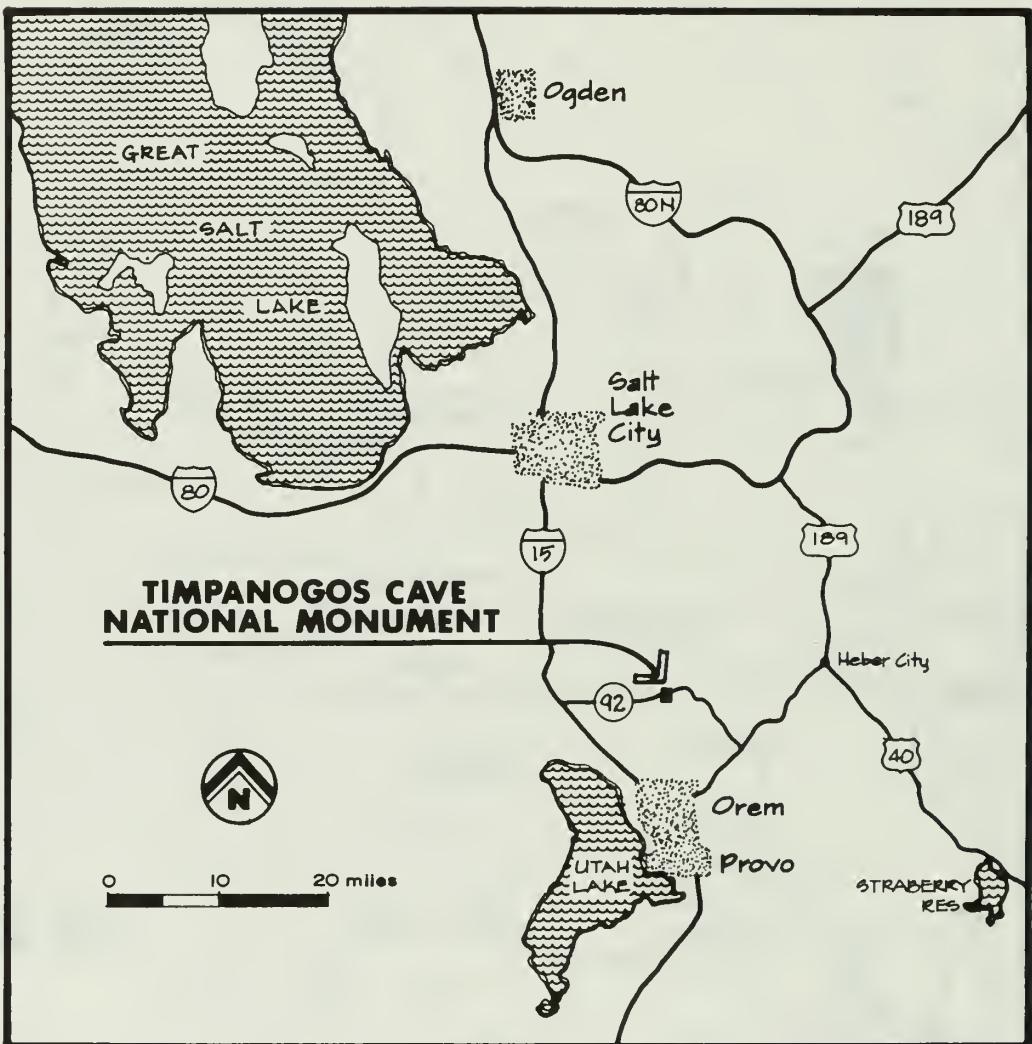
 National Park Service Areas

----- National Park Service
Historical Trails

ROCKY MOUNTAIN REGION

National Park Service

United States Department
of the Interior



Vicinity Map

Timpanogos Cave National Monument

U.S. Dept. of the Interior - National Park Service

28 27



feet 0 200 400 600
meters 0 50 100 150

Boundary Map

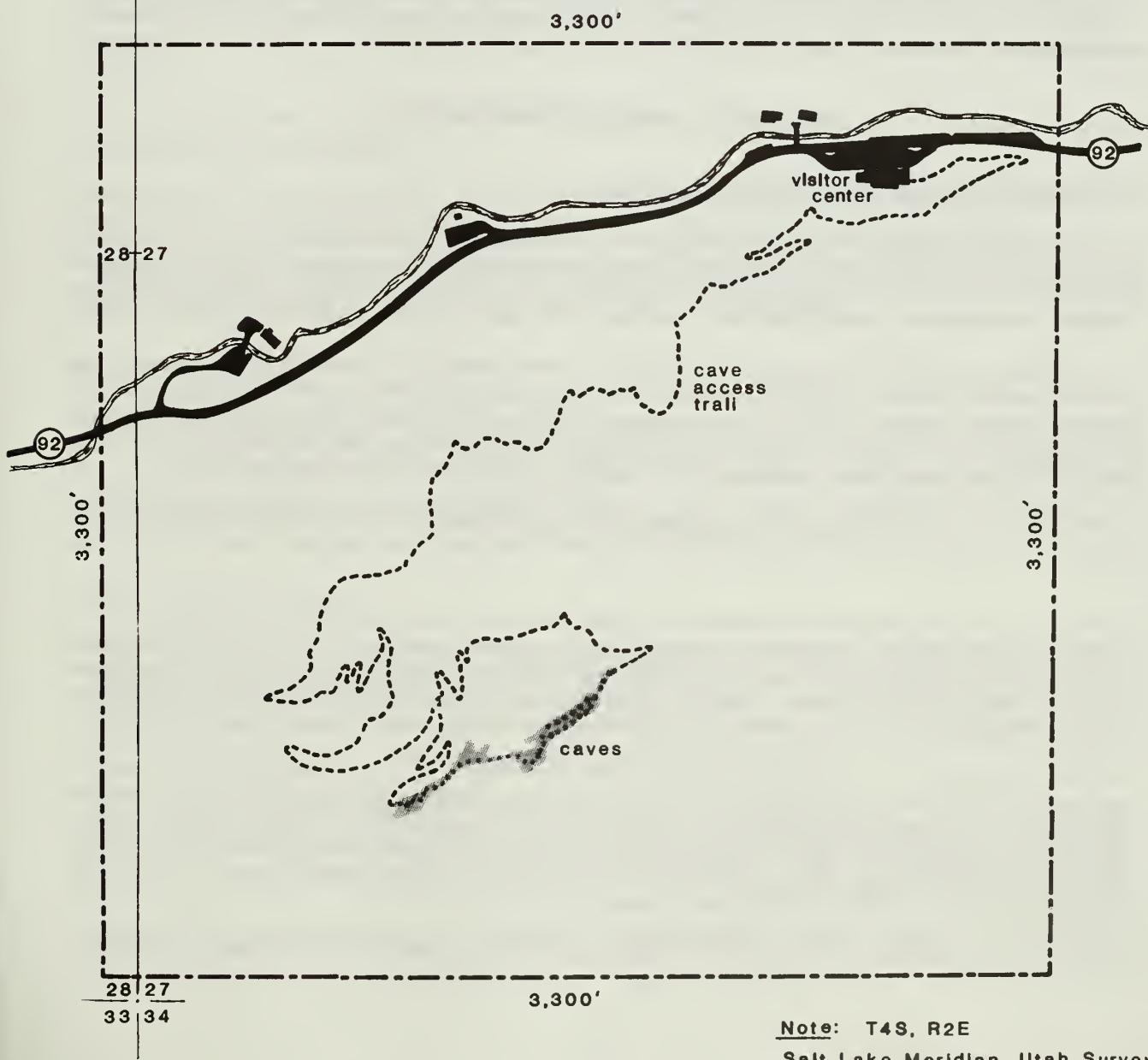
Timpanogos Cave
National Monument
Utah

United States Department of the Interior
National Park Service

LONE PEAK WILDERNESS AREA

UINTA NATIONAL FOREST

Forest Service South Wilderness Boundary



Note: T4S, R2E
Salt Lake Meridian, Utah Survey

UINTA NATIONAL FOREST

LOCATION

Timpanogos Cave National Monument is located in Utah County, Utah, which is in the Third Congressional District. The 250-acre monument is located in rugged, scenic American Fork Canyon. Access to the monument is via Utah Highway 92, the Alpine Scenic Loop.

PURPOSE AND SIGNIFICANCE

President Warren G. Harding, by Proclamation No. 1540, dated October 14, 1922, under the authority of the Act of June 8, 1906, (Stat. 225), established Timpanogos Cave National Monument. The series of three limestone caves was placed under jurisdiction of the U.S. Forest Service to be protected for its "unusual scientific interest and importance." Executive Order No. 6166, dated June 10, 1933, placed all national monuments under the jurisdiction of the U.S. Department of the Interior, and transfer of Timpanogos Cave to the National Park Service occurred on July 1, 1934. Under provisions of the National Park Service Organic Act of 1916, the area is to be managed in a manner which will conserve the natural resources and provide for public use and enjoyment (see Appendix A.).

INFLUENCES: INVENTORY AND ANALYSIS

LEGISLATIVE AND ADMINISTRATIVE REQUIREMENTS

There have been no significant boundary changes since establishment of the monument in 1922. However, a subsequent survey (1945) determined that the boundary as marked on the ground did not coincide with the diagram which formed part of the 1922 proclamation. Therefore, the description of the boundary was changed by Presidential Proclamation 3458, dated March 27, 1962, to conform with the physical boundary.

A List of Classified Structures Inventory was carried out in November 1975. A National Register nomination was submitted in February 1982 for the Timpanogos Cave Historical District, which was placed on the National Register October 13, 1982. The contributing structures of the Historic District are: Chief Ranger's Residence (Building Number 2), bridge, Comfort Station Building Number 126, Comfort Station Building Number 127, two cold cellars, the stone storage building, and the old Timpanogos Cave Trail.

A permit was issued January 1, 1978, to Mountain States Telephone Company for the right-of-way for telephone transmission lines, expiring December 31, 1997. The lines have a negative visual impact on the area.

An electric services agreement dated February 18, 1955, exists with Utah Power and Light Company. Utah Power and Light assumes maintenance responsibility for a government-built line and agrees to furnish electrical service to the monument. On April 1, 1966, a contract was issued for reconstruction of the system by Utah Power and Light Company. There is considerable negative visual impact which could be minimized by some realignment, which the company has agreed to do as replacement of poles becomes necessary.

A limited concession permit was issued to Mr. and Mrs. Carl Wagner for a food and souvenir concession on January 1, 1986, and will expire December 31, 1989. The concession operates approximately six months per year, providing needed refreshments to visitors after the strenuous trail hike. It is housed in a portion of the visitor center constructed for the purpose and has minimal impact on the area. Souvenir sales consist primarily of sweat shirts for visitor comfort in a 43-degree cave. Other souvenirs serve to make the concession operations financially feasible.

Executive Orders 11990 and 11988 control development on Wetland Habitats and 100-year flood plains.

RESOURCES

Natural Resources

The primary resource of the area is Timpanogos Cave, located in the south wall of American Fork Canyon, 1,065 feet above the visitor center. Timpanogos Cave and nearby Hansen and Middle Caves are connected by man-made tunnels, so visitors enter the caves at Hansen Cave, travel through Middle Cave, and exit through Timpanogos Cave. The caves are small with no huge rooms or large passageways. Following the tour route, the total distance through the caves is 1,800 feet.

Stalactites, stalagmites, and other common features are found in the caves, but it is the tremendous number of helectites which make these caves unique. Helectites are small cave formations which twist and turn into strange and fantastic shapes as they grow from the cave walls or ceiling.

Due to changes in elevation and exposure, a wide variety of plants are found within the monument. These plants may generally be grouped into three categories by the location in which they are found. South and west facing slopes, which are a warm and relatively dry environment, are dominated by gambel oak.

The canyon floor provides a moist environment suitable for such large trees as cottonwood, box elder, and white fir.

The cool, moist, shaded environment of the north-facing slopes support white fir, Douglas fir, red osier dogwood, and mountain maple.

Despite the monument's small size, a variety of animals are found within it. A few bats may be found in the caves, but are not common. Cougar also live in the area, however, they are seldom seen.

There are no known endangered plants or animals in the monument. However, a threatened and endangered species survey has not been undertaken within the monument.

Cultural Resources

There are few cultural resources outside of the Timpanogos Cave Historic District described under Legislative and Administrative Requirements. An archeological survey has been carried out in accordance with Executive order 11593. The one site found, a Fremont-style anthropomorphic figure, does not meet the criteria for nomination to the National Register of Historic Places. The site is protected and inaccessible to the public, due to its location. The survey report was completed in November 1975.

LAND USES AND TRENDS

Timpanogos Cave is surrounded by the Uinta National Forest. North of Utah Highway 92 (which bisects the park), the park is bordered on the north by the 30,088-acre Lone Peak Wilderness Area. South of Highway 92, the Pleasant Grove District of the Uinta National Forest surrounds the park. This area, which includes Provo and American Fork Canyons, is heavily used by local residents for various types of recreation such as sightseeing, camping, picnicking, hunting, fishing and winter sports.

Over the past few decades the Wasatch front from Ogden to Provo has become increasingly urbanized. The population of Utah County, in which Timpanogos Cave is located, increased 58.3 percent in the decade of 1970-80. While the area just outside the mouth of American Fork Canyon was largely small grain and livestock farms or fruit orchards 15 years ago, today it is predominantly subdivided housing tracts. Although the monument is buffered by the surrounding national forest and visitation to the caves is already approaching the maximum that can be managed with available staff and budget resources, the effect of the increased urbanization and recreational activity in the American Fork Canyon will probably continue to place additional demands on park staff and resources.

There are no private holdings within the boundary of the monument.

VISITOR USE ANALYSIS

The 1988 visitor season began with the opening of cave tours on May 7 and ended with tours on October 30. During this time 5,199 cave tours were provided for 89,969 visitors. This is the highest to date number of cave visitors in the history of the monument. An additional 1,685 were turned away, because visitor demand exceeds the carrying capacity of the caves on Saturdays and holidays.

Approximately 75 percent of the park visitation occurs during June, July, and August. From mid-June until schools open in late August, visitation is consistently heavy. During this period of heavy visitation, visitors who arrive before 10 a.m. may generally start up the trail for their cave tour immediately. Visitors arriving after 10 a.m. must wait at the visitor center before starting up the trail.

On a weekday the wait will often be one hour by mid-afternoon, because visitors are arriving faster than the tours can be given. Each tour can accommodate 20 people. Tours are generally run 10 minutes apart, which accommodates 120 visitors per hour. On particularly busy days (holiday weekends etc.) tours may be as close as 5 minutes apart (staffing permitting) which then accommodates approximately 240 visitors per hour. This spacing is extremely difficult to maintain and the quality of the visitor experience suffers due to pressures to keep the groups moving.

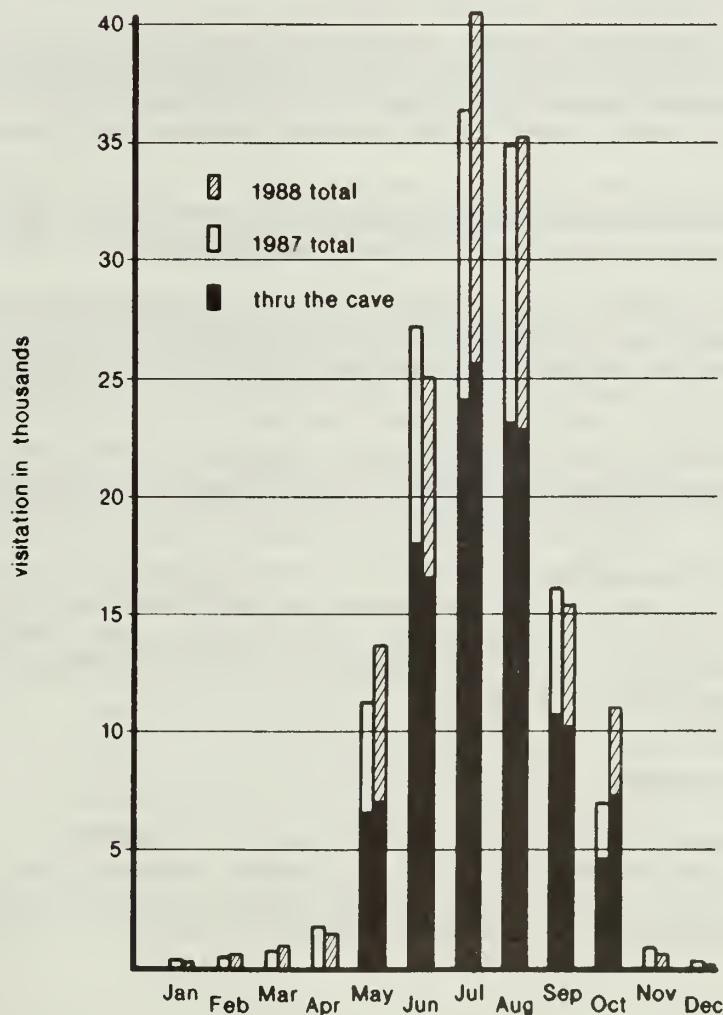
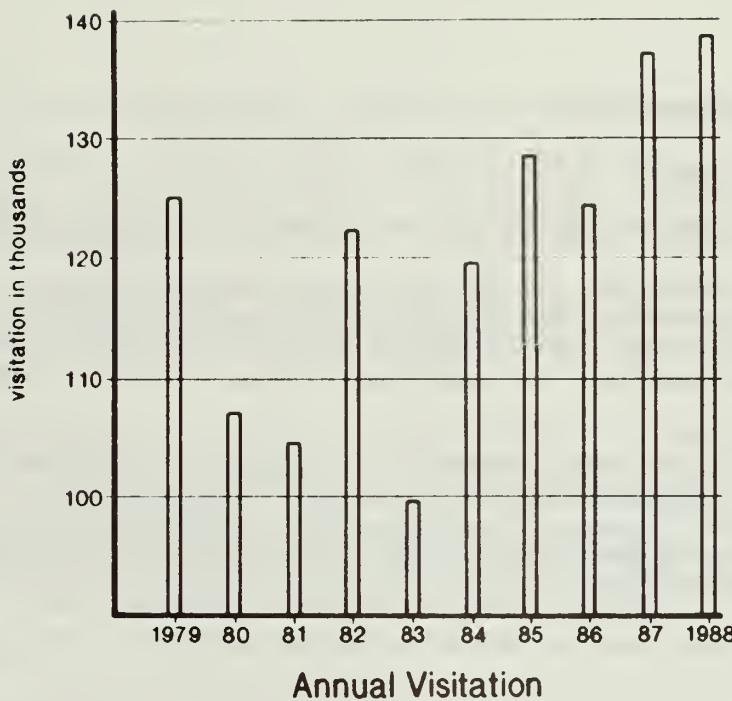
This daily visitation pattern is consistent for all weekdays. The visitation pattern is similar on Sundays, except visitation is extremely light during the morning. Saturdays by far receives the heaviest visitation. Quite often there will be a line of visitors waiting at the door of the visitor center by 8 a.m. All tours for the day are usually filled by early afternoon and may fill as early as 11 a.m. On weekends approximately 90 percent of the visitors are from Utah. On weekdays 70 percent of the visitors are from Utah and 30 percent from out-of-State.

The Visitation Trends Graph illustrates a major decline in park visitation after 1977. This is an accurate picture since park visitation has always been calculated as a percentage of cave tours. The percentage used to calculate total visitors was reduced in 1978. Note that the cave tours on the graph illustrate a more consistent trend. Cave tours are determined by actual count.

PEAK DAYS 1988

Date	Number of Tours	Cave Visitors	Total Visitors
9/5	73	1,492	2,238
7/25	68	1,383	2,074
7/4	63	1,263	1,894
8/13	61	1,205	1,807
8/20	57	1,190	1,785
8/27	58	1,182	1,773

Average daily visitation for July was 1,242; 828 cave visitors. Non-cave visitors view the audiovisual programs, visit the museum, fish and picnic.



Monthly Visitation – 1987/88
Timpanogos Cave National Monument

FACILITY AND EQUIPMENT ANALYSIS

Non-Historic Roads and Trails

The park has 600 feet of roadway, four parking lots (129 spaces), and 1.87 miles of paved trails.

The main road through the monument is Utah Highway 92 and is maintained by the State. The only roads maintained by the park are the 500-foot road leading to the utility area and Residence 2 and the 100-foot road leading to Residences 8 and 9. There is a 56-space parking lot at the visitor center, a 35-space lot across Highway 92 from the visitor center, a 13-space lot at the nature trail, and a 25-space lot at the picnic area.

The 1-½ mile trail from the visitor center to the cave is one of the major facilities in the park. This trail climbs 1,065 feet along the steep south wall of American Fork Canyon. Due to the large number of visitors using this trail, it was paved in 1957. Because of the extreme weather conditions in the canyon and constant rockfall damage, the trail requires continuous maintenance. One third of the trail is resurfaced each year. The trail is in generally good condition.

The trail through the cave is also paved and stairs and handrails are provided for access in the more difficult passages.

In addition to the cave trail, a ¼-mile nature trail follows the American Fork River from the visitor center to the picnic area. Due to the considerably milder weather conditions on the canyon floor and a lack of damaging rockfall, this trail requires much less maintenance.

Following the Development Concept Plan of 1983, a Canyon View Nature Trail is being constructed on the north side of the creek. This interpretive nature trail originates directly across from the visitor center and, when completed, will connect with the existing nature trail. This trail will offer excellent views of the canyon and the cave trail, will traverse three ecotones, and will provide an alternative hiking opportunity on a sunny south facing slope.

There are two roadway bridges and four footbridges across the American Fork River within the monument. All of these structures are maintained by the park and are in good condition.

The cave trail rockfall barrier, installed in 1977, is located in the exposed drainage above the cave restroom. This drainage is crossed seven times by the cave trail and is the most hazardous portion of the trail. The rockfall barrier is designed to stop rocks at the head of the drainage, thereby preventing them from falling onto the trail below.

Retaining walls have been installed at various times along the American Fork River. A great deal of dry-laid stone retaining wall was built during the 1930s and 1940s; however, only a small portion of this wall remains intact.

Following the flood in 1965, approximately 300 feet of rock-faced concrete stem retaining wall was constructed to protect the picnic area restroom, maintenance shop, and Residence 2. Again following high water damage in 1983, an additional 500 feet of retaining wall was added to protect Residence 8, the main waterline, the picnic area, and access road. In 1988 an additional 150 feet of retaining wall was constructed to protect the bridge just west of the visitor center.

Nonhistoric Buildings and Facilities

The visitor center (constructed in 1967; 6,700 square feet) contains 4 administrative offices and visitor facilities including exhibit area, information and ticket sales counter, Southwest Parks and Monuments Association sales display, 100-seat auditorium with a 12 minute slide/tape program, and public restrooms. A concession area is separated from the main visitor center by a roofed patio. The concession area

contains a snack bar and souvenir shop. This facility is in good operating condition.

The maintenance shop (constructed in 1965; 2,194 square feet) contains four 18 foot by 24 foot bays used for equipment and vehicle storage, supplies storage, workspace, and office space for the maintenance foreman. A 10 foot by 18 foot storage shed was added to the east end of the building in 1971. The structure is in good condition.

Residences 8 and 9 (constructed in 1965, 1,400 square feet each) are typical Mission 66 houses with attached garages. Both houses are in good condition. Free standing wood stoves have been installed in each residence.

The Swinging Bridge Picnic Area contains 16 sites and 24 tables. The area is located along the American Fork River, $\frac{1}{4}$ of a mile down canyon from the visitor center. Tables, fire grills, trash receptacles, and water faucets are provided. Despite heavy use this facility is in generally good condition.

An unheated comfort station (constructed in 1965, 375 square feet) is located in the picnic area. This facility contains men's and women's restrooms and a utility room. Effluent from this restroom is pumped to the main leach field for disposal. The structure is in good condition.

Utility Systems

Three-phase electricity service is provided to the park by the Utah Power and Light Company. Considering the rather difficult access to the park facilities, service to the area is good.

Telephone service is provided by U.S. West Communications Inc. Six lines are utilized by the park.

Communications with the cave are by park radio. The system consists of a base station at the visitor center, two mobile units, and numerous handsets used by the maintenance crew, cave guides and patrol rangers.

Garbage is collected by the park maintenance staff and carried in the park truck to the Orem City Landfill. Usually two trips per week are needed in the summer (with one or two extra trips on holiday weekends) and one or two trips per week during the rest of the year.

The entire water system in the canyon floor is gravity operated. The water source is two boxed springs located 510 feet higher than the visitor center elevation on National Forest Service land in Swinging Bridge Canyon. From the springs, water flows through a 4 inch iron pipe to the hypochlorinator building - a distance of approximately 1,300 feet with an elevation loss of 334 feet. At this point the water for the park is treated with chlorine gas and the volume of the water is metered. Water in excess of the park's needs continues down the 4 inch line and feeds into the Utah Power and Light Company's 24 inch line. After treatment and metering, the water is fed through a 2 inch line into a 100,000 gallon above-ground steel tank. From this tank, water flows to the facilities in the canyon floor through 4 inch mains and 2 inch lateral pipes. A 20,000 gallon underground tank is located along the line to the utility area. This tank is used for additional storage and allows manual operation of the system when the steel tank and chlorinator are out of service. The water system is in good condition.

The sewer system in the canyon floor is composed of septic tanks and drain fields. An 11,000 gallon septic tank serves the visitor center and Residences 8 and 9. The Swinging Bridge picnic area restroom has a separate septic tank. The drain field for both tanks is located across the highway from the picnic area. Since the drain field is slightly higher than the picnic area restroom, effluent is held in an underground vault at the restroom. When the vault is full, the effluent is automatically pumped up to the drain field. A secondary pump automatically takes over should the primary pump fail. The maintenance shop and Residence 2 have a separate tank and drain field. Both systems are in fair condition and operating smoothly.

The water source at the cave is a pool approximately 300 feet into Hansen Cave. This part of the cave is

closed to the public. The water is pumped from the pool into two 2,500 gallon redwood tanks. From the tanks the water flows by gravity to a 125 gallon steel tank where it is batch chlorinated. The water continues by gravity to the drinking fountain in the Grotto. This system works quite well although it requires a substantial amount of manual operations.

Power for the cave lighting system is supplied through an overhead powerline originating near the maintenance area and entering the cave through the natural entrance to Middle Cave. Within the caves the system contains 177 lights controlled by magnetic and manual switches and mercury relays. The system is in generally good condition.

Historic Structures

The Timpanogos Cave Historic District was placed on the National Register on October 13, 1982. The Historic District contains the following structures:

Residence 2 is a stone, two-bedroom house without a garage, constructed from 1940 to 1942. This structure is extremely attractive. The interior was remodeled in 1983-84; however, the stone exterior for which the building was nominated was not modified. The structure is in good condition.

The old bathhouse (336 square feet) was originally used as the bathhouse for the cave campground. This 1928 structure is presently used only for storage and is in fair condition.

The cave restroom (153 square feet) was constructed in 1939 beside the trail near the entrance to Hansen Cave. The building contains men's and women's restrooms with vault toilets, and a small storage room. There is no water or heat in the building. Sewage is retained in a 2,000 gallon concrete vault below the restroom. A small exhaust fan causes air to flow in through the toilets and out a small stack which keeps odors within reasonable limits. Each fall the holding vault is drained into a sludge pit located 160 feet down the mountainside. This cave restroom structure is in good condition.

Equipment

Trail Truck. This small diesel powered vehicle was custom built by Young Machine Company of Monticello, Utah, for use on the cave trail. It is the only machine in the park capable of transporting sizable loads to the cave entrance or exit. The truck has a 1-yard hydraulically operated box and a snow plow attachment for clearing roads and parking lots during the winter. Cost: \$25,000.

Loader. A small Bobcat loader with a backhoe and roadbroom attachments is used for general maintenance and trail maintenance on the lower half of the cave trail. Cost: \$9,250.

Vehicles. Two General Services Administration rental vehicles are used in the park: a four-wheel drive passenger vehicle, which serves as the park law enforcement vehicle and general transportation, and a 3/4-ton truck with box and hoist used for general maintenance and hauling trash to the landfill.

Miscellaneous Equipment (partial list).

Pneumatic drill	Litter-Vac sweeper
Cash register (2)	Concrete mixer
Chain saw (2)	Compressor (gas)
Air compressor (electric) (2)	Welders (electric and table acetylene)
Saw	Trail bike
Drill press	Rotary hammer
Snow blower	Personal computers (4)
Wet vacuum	

STATUS OF PLANNING

NAME OF PLAN/STUDY	PREPARER	APPROVED	ADEQUACY	REPOSITORY
General Mgmt. Plan/ Development Concept Plan/Interpretive Prospectus	Park/RMR	9/27/83	Adequate	Park/Region
Natural Resource Management Plan	Park	9/83	Inadequate*	Park
Cultural Resource Management Plan	Park	8/84	Adequate	Park

* A Cave Management Plan is in draft form for review as of 2/24/89. When approved, this plan will bring the Natural Resource Management Plan up to adequate status.

EXISTING MANAGEMENT ZONING

Most of Timpanogos Cave National Monument is in a natural management zone. The cave itself is classified as an outstanding natural feature subzone. The natural zone comprises 94 percent of the park.

The remaining land is divided into a historic zone (1-½ percent) and a development zone (4-½ percent). The historic zone contains the Timpanogos Cave Historic District which is on the National Register of Historic Places. The old cave trail, cave restrooms, and several stone structures dating from the 1930s and 1940s are within the zone. The majority of the structures are along Highway 92 just inside the west boundary of the monument.

MAJOR ISSUES AND MANAGEMENT OBJECTIVES

GENERAL OBJECTIVE

Provide protection for the natural and cultural resources of the monument.

Issue

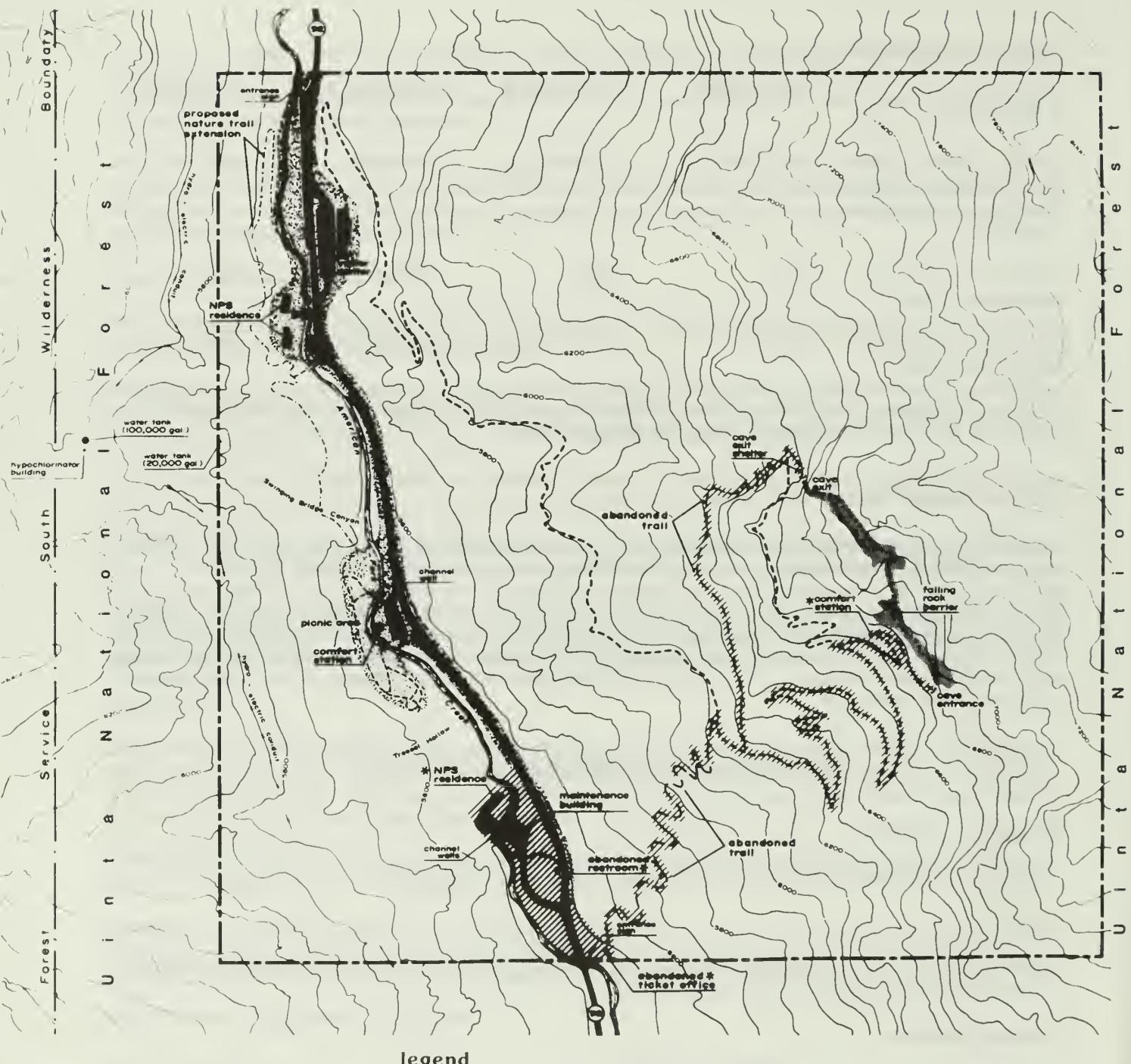
Airborne pollutants from nearby industrial areas may be causing damage to the cave resources. Air pollution is likely to increase as nearby urban areas expand.

Specific Objectives

- Determine the types of pollutants that are present in the caves.
- Determine the effects of the pollutants on the cave resources.
- Develop appropriate methods of mitigation of any harmful effects.

Issue

Hydrology of the cave system and its relation to the overall hydrology of the north slope of Mt. Timpanogos is poorly understood. Continued development of cave formations is dependent on an adequate flow of



legend

- — — monument boundary
- - - - - cave access trail
- cave trail
- - - - - picnic trail
- - - - - nature trail

- | | |
|---------------------|---------------------------------------------------|
| [white box] | natural zone-94% /250 acres |
| [solid black box] | outstanding natural feature subzone (underground) |
| [diagonal hatching] | development zone-4.5% /11.25 acres |
| [cross-hatching] | historic zone-1.5% /3.75 acres |
| * | structure included in historic zone |
- total 265 acres



0 500 feet
approximate scale
contour interval 100'

Existing Management Zoning Map Timpanogos Cave National Monument

United States Department of the Interior - National Park Service

unpolluted water through the cave system.

Specific Objectives

- Determine sources and destinations of water flowing through the cave system.
- Establish baseline information of the chemical composition of water flowing through the cave system.
- Develop water quality monitoring program to detect changes in chemical composition or presence of pollutants in cave water.

Issue

The existence of other caves in the monument is suspected but not known. Current development may be impacting as-yet unknown cave systems.

Specific Objectives

- Utilize modern remote sensing technology to survey the monument for possible additional cave systems.
- Determine the environmental effects of the existing cave restroom leach tank on possible cave systems.

Issue

No threatened or endangered species survey has been conducted in the park.

Specific Objective

- Conduct a threatened or endangered species survey.

Issue

Increasingly heavy visitor use is causing loss of native vegetation and accelerated erosion along the cave trail in the picnic area, and along the river bank near the visitor center.

Specific Objective

- Determine methods of mitigating this damage.

GENERAL OBJECTIVE

Provide the opportunity for safe and meaningful visitor experiences in the monument.

Issue

Visitor demographics and expectations are poorly understood. Visitor programs should be developed based on this information, once obtained.

Specific Objectives

- Conduct visitor use and demographic study
- Incorporate this information into visitor program and facility development design and implementation.

Issue

Provide interpretive media and programs which will increase the opportunities for meaningful visitor experiences.

Specific Objective

- Develop effective museum exhibits, audiovisual programs, wayside exhibits, cave tours, and other interpretive programs (for further information see the Interpretive Prospectus, 1983 General Management Plan, p. 15-21).

Issue

Increasing recreation use in American Fork Canyon is creating traffic congestion and potential visitor safety problems near the visitor center.

Specific Objectives

- Identify methods to better control traffic and parking problems near the visitor center. This might result in a requirement for increased law enforcement personnel.
- Explore with U.S. Forest Service the possibility of establishing a public transportation service in the canyon during the summer.

GENERAL OBJECTIVE

Reduce vandalism to monument signs and facilities.

Issue

Vandalism to monument signs and facilities reduces the quality of the visitor experience and wastes park resources.

Specific Objective

- Develop methods of reducing vandalism.

73. Timpanogos Cave National Monument

Establishment: Proclamation (No. 1640) of October 14, 1922.....

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1640—Oct. 14, 1922—42 Stat. 2285]

WHEREAS, a natural cave, known as the Timpanogos Cave, which is situated upon unsurveyed lands within the Wasatch National Forest in the State of Utah, is of unusual scientific interest and importance, and it appears that the public interests will be promoted by reserving this cave with as much land as may be necessary for the proper protection thereof, as a National Monument.

Now, THEREFORE, I, Warren G. Harding, President of the United States of America, by virtue of the power in me vested by section two of the Act of Congress approved June eight, nineteen hundred and six, entitled, "An Act for the preservation of American antiquities," do proclaim that there is hereby reserved from all forms of appropriation under the public land laws, subject to all prior valid adverse claims, and set apart as a National Monument, the tract of land in the State of Utah shown as the Timpanogos Cave National Monument on the diagram forming a part hereof.

The reservation made by this proclamation is not intended to prevent the use of the lands for National Forest purposes under the proclamation establishing the Wasatch National Forest, and the two reservations shall both be effective on the land withdrawn but the National Monument hereby established shall be the dominant reservation and any use of the land which interferes with its preservation or protection as a National Monument is hereby forbidden.

Warning is hereby given to all unauthorized persons not to appropriate, injure, deface, remove, or destroy any feature of this National Monument, or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this fourteenth day of October, in the year of our Lord one thousand nine hundred and twenty-two,
[SEAL] and of the Independence of the United States of America the one hundred and forty-seventh.

WARREN G. HARDING.

By the President:

CHARLES E. HUGHES,
Secretary of State.

NPS D-1e

